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III. *Observations respecting the Small-Pox and Inoculation in Eastern Countries ; with some Account of the Introduction of Vaccination into India.* By  
 WHITELAW AINSLIE, M.D. M.R.A.S.

Read June 16, 1827.

THERE was a time, when to treat of the small-pox must have been a task truly painful ; when, alas ! little more could be done than to trace its devastations and its horrors : but, thanks to heaven and the perseverance of the benevolent, those days are long past, and the subject can at length be viewed in a very different light. Relieved from the distressing office of but too frequently having to offer a vain consolation to a virtuous mother sorrowing for the loss of a darling child, medical men can now speak of the disease with far other feelings ; with the same satisfaction, to use a metaphor, that is felt in painting the blessings of an honourable peace, which have succeeded to a long and disastrous war ; or the joy of a private family, which has finally risen into comfort and security, through a protracted struggle of domestic affliction.

Much difference of opinion has existed with regard to the period when the small-pox, or as it has lately been scientifically named, the *emphyesis variola*, made its first appearance in the world ; and some authors have believed that this disorder, as well as the *measles*, with which it was in early ages confounded, were coeval with the human race. We certainly have no proof that either the Greeks or Romans were acquainted with it : at least no account is to be found in any of their works which perfectly agrees with its pathognomonic signs,\* minutely examined as those works have been, for the purpose of such discovery, by several of our most distinguished writers.† That it raged in China long before it was observed in Europe, is

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\* It would seem, however, that both *Salmasius*, and after him *Johannes Hahn*, a Dutch writer, had entertained a different opinion, and supposed that the disease had been described under another name (anthrax) by Hippocrates, and noticed by Celsus, Galen, and *Ætius* : a supposition so absurd, that it cannot for a moment be listened to.

† See Mead's medical works, vol. i. p. 229 ; also Willan on the Diseases of the Skin, vol. i. pp. 251-252.

a fact no longer doubted. Every one conversant with the history of the *variola* must have heard of a Chinese treatise on it, entitled *Taou-tchin-fa*, in which it is stated, that it did not show itself in that part of the world sooner than the year 1122 before Christ; and Father d'Entrecolles, a Jesuit, mentions having seen a work in which it is described as a malady of the earliest ages.\* Many maintain that India gave birth to this hydra: and it has, unquestionably, been a dreadful scourge in that country from the most remote antiquity; a truth of which the reader may easily be assured by turning to *Sonnerat*, 'Voyages aux Indes Orientales,'† and also to a curious account of inoculating for the small-pox in the East-Indies, by J. Z. Holwell, published in 1767.

Rather varying information has been given of the goddess who is supposed by the Hindus to preside over this plague on the continent of India, and on Ceylon. By the *sástra* which Sonnerat consulted, it appears that *Mariatalé* (*Mariyatáli*), the wife of *Chamadaguini* (*Jamadagni*), and mother of *Parapourama* (*Paraśu-ráma*), was the divine being in question, and that the power of healing this dreadful affection was bestowed upon her by the deities named *Dévélkers*. Temples are dedicated to her, and festivals celebrated in her honour; some of the ceremonies of which are of a nature so cruel‡ as to be highly reprobated by even the Brahmins themselves. In some tracts of southern India she is supplicated, worshipped, and her wrath deprecated, under the name of *Mariamá*; in others lying farther north, under that of *Sítalá*:§ hence the Hindustani appellation of *باري سیتلا* *barí sítlá*, by which the small-pox is well known to the Mahometans.

*Philip Baldæus* has said, in his work entitled "A true and exact Description of the East-Indies," published in 1664, that in Ceylon the small-pox goddess is called *Patagráli*. He has given us a print of her, as having a tremendous form, with eight faces and sixteen arms; and asserts that she was the daughter of a god called *Ixora* (*Iśwara*). Be all this as it may, certain it is, as already advanced, that the evil in question has been felt and dreaded,

\* See Moore's excellent History of the Small-Pox, p. 23.

† Tom. i. p. 244.

‡ At one of those ceremonies a man is suspended in the air by means of a cord run through the fleshy part of his loins. In this way he is whirled round at the extremity of a long pole, and at a great height from the ground.

§ This goddess is painted as a yellow woman sitting on a water-lily. Worship is offered at her shrine on the 7th, 8th, and 9th of the increasing moon; on the 10th the image is thrown into the water.—See Ward's View of the History, Literature, and Religion of the Hindus, vol. i. p. 174.

not only in India, but in several of the adjacent territories,\* from time immemorial; and it is but too true, that till the good effects of vaccination began to be there experienced, in no region of the earth were its ravages more appalling. Not rarely did it happen, that whole villages were depopulated: the distemper, besides, but too often assumed its most malignant form (*variola pustulis numerosis confluentibus*), which, amongst the natives, proved so generally mortal, that the relations of the poor sufferers, on discovering its putrid nature, not unfrequently cut asunder the ties of human affection, and deserted them altogether, moving off to a different part of the country, or to the opposite and windward side of a town, with such of the family as either had the disease of a milder kind (*variola pustulis paucis discretis*), or had hitherto escaped the contagion.

Hillary† speaks of the small-pox and measles as “originally hatched and bred in, and properly indigenous to Arabia, probably in its most southern districts.” Mead, on the other hand, thought it commenced its havoc in Africa, and more especially in Ethiopia: a notion which appears to be confirmed by Dr. John Reiske, of Leyden, who being well versed in Arabic literature, ascertained from certain relics, that about the year of our Lord 572, the same in which Mahomet was born, Ethiopian traders carried the malady for the first time into Arabia. Dr. Friend, however, was of an opposite opinion; and in his “History of Medicine” tells us, that he believes it was first brought into Egypt during the caliphate of OMAR, about the year of Christ 640, by the Arabians, who had been infected by some Eastern or remote nation: and why not, we should add, according to the testimony of Webster,‡ by the Hindus? “Ab Indiâ orientale in Egyptum, inde in Arabiam, denique in Europam, variola pestis illa gravissima, commigrasse videtur.” Although, by this quotation, the learned physician seems to have thought that the small-pox had, on its way from the East, reached Egypt previously to its committing its ravages in Arabia; at all events, once established there, we can readily conceive how quickly it must have been spread by the Saracen conquerors.

Baron Dimsdale says: “it is granted that the small-pox was imported from Asia by the crusaders, and did not shew itself in Europe before the thir-

\* See an account of an embassy to Thibet, by Captain Samuel Turner, in 1800, pp. 219–220.

† See Woodville’s History of the Small-Pox, vol. i. p. 2.

‡ Vide Medecin. Prac. System. Carol. Webster, edit. tom i. p. 288.

“teenth century:” a statement which we cannot reconcile with the facts, that both *Constantius* in Italy and *Avenzoar* in Spain, had noticed the evil as common in those dominions, in the eleventh century. Nay, we know that Mr. Moore, in his history\* of the disease, gives us a curious account of the primary introduction of both it and the measles into Spain, by means of a Saracen invasion, occasioned by a rape committed by a king, and the consequent vengeance of a beautiful woman, as far back as the year 710. At what time Britain was first made to feel the effects of a disorder which other nations already lamented, it is impossible exactly to determine. We can only say with confidence, that by the earliest British medical writers, which were those of the thirteenth century,† the complaint is generally noticed. New Spain, according to Garcia,‡ was originally visited by it in 1520, when he declares it proved fatal to half the people of the provinces to which the infection extended. Then again we learn from Mr. Condamine, in his “*Mémoire sur l’Inoculation*,” p. 61, that about fifty years after the discovery of Peru, this affection was carried over from Europe to America by the way of Carthage. Now, as Peru was discovered by Pizarro§ in 1526, it would appear by this account, that the *variola* did not reach America before 1576, which but ill agrees with what has been stated by Garcia. In addition to all this I must here observe that, according to Robertson, Hispaniola|| suffered dreadfully from the small-pox in 1517: but as such discussion may be considered as a little foreign to my subject, referring as it does more immediately to Eastern countries, I briefly hint, before proceeding to further particulars, that the small-pox in a northern direction did not arrive at the frozen region of Greenland¶ before the year 1733, when it nearly carried off the whole of the inhabitants.

Whatever may be the varying sentiments regarding the era when the small-pox first shed its malignity on mankind, or its subsequent propagation, the same differences do not exist with respect to the writer who first

\* See History of the Small-Pox, page 76.

† Dr. Woodville, however, from an examination of many books in the British Museum, states that he has reason to think the small-pox was known in our island long before the Crusades began, in 1096.

‡ Garcia, Origin. p. 88, cited by Robertson in his History of America, vol. iii. p. 400.

§ See Robertson’s History of America, book iii.

|| Ibid. book iii.

¶ Grantz’s History of Greenland, vol. i. p. 336.

published on the subject. Aaron of Alexandria, a distinguished author in the time of Mahomet, gave some account of the disease, according to the testimony of Rhazis,\* who himself treats both of this and the measles, and who is, indeed, as Woodville justly allows, the principal amongst the old physicians in whose works, still extant, the attention of the world was called to the then reigning calamity. Aaron was a very voluminous writer, an adept in medicine as well as a priest of Alexandria, when that city was besieged by the Saracens, and was by every account highly esteemed in Arabia. It is a curious fact, that this learned man does not take the least notice of the contagious nature of the small-pox, but supposed it to proceed from an ebullition of the blood.† He it was, by all I can learn, who originally adopted the hypothesis of an adust blood and bile, of corrupt humours, and, what is interesting to know, of “refrigerants which could retain pustules, and warm medicines which could expel them externally:” realities which formed the basis of that method of treating the malady, by the free admission of cool air and other antiphlogistic means, first distinctly suggested by Sydenham,‡ afterwards improved by Boerhaave,§ and finally meliorated and established by Cullen in 1779. The next authors, in order of time, who wrote on the disorder, were Bachtishua and John the son of Mesue. The first was physician to the Caliph ALMANSOR, in the eighth century; and, according to Rhazis,|| maintained that the measles were occasioned by blood mixed with a large proportion of bile, and that the small-pox proceeded from an over gross and moist blood. The latter (John the son of Mesue) flourished towards the beginning of the ninth century; though, according to some, at a later period, he was a physician at the court of Haroun al Raschid, and renowned for his general learning as well as professional zeal.

Of the labours of the Arabian writers just mentioned, but a few scattered fragments have escaped the ravages of time; but the works of *Isaak* the Israelite, remain. The exact time in which he lived cannot be distinctly ascertained; but, from the order in which *Hali Abbas* quotes him, it may have been in the ninth century. He would seem to have been an intelli-

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\* Vide *Rhazis de variolis et morbillis*. Edit. Canning.

† See Dr. Mason Good's "Study of Medicine, vol. ii. p. 619.

‡ Born at Winford Eagle in Dorsetshire, in 1624.

§ Born near Leyden, in 1668, and became the most celebrated medical writer and practitioner of his day.

|| Vide Rhazis.

gent and amiable man, and thoroughly acquainted with the Greek authors of all descriptions.

Serapion treated slightly of the distemper, and dwells much on the advantage to be derived from a light acescent diet. He lived and published towards the end of the ninth century; cites Mesue, who practised physic at Bagdad A.D. 795, and is himself referred to by Rhazis. This last-mentioned medical sage, for so he was reckoned, was named after a city of Khorassan, *Rhei*, in which he was born. He wrote, as already stated, professedly *de variolis et morbillis*, obtained great repute towards the beginning of the tenth century, and was the first who remarked that there were instances of the small-pox having occurred twice, and even thrice,\* in the same person. *Abulpharagius*† speaks of him under the name of *Muhammed Ebn Zacharia al Razi*. Pocock makes him to have died in 930, and informs us that he was not only an able physician, but skilled in music, philosophy, and astronomy.

In the course of time came Hali Abbas, who was named by the Saracens *Mhalūki*, and was of the order of the magi. This distinguished Arabian wrote his famous *Regalis Dispositio* about the year 980: it is a general treatise on the healing art, dedicated to Caliph EDDOULAT, and was translated from the Arabic into Latin by Stephanus, in 1492. Farther, however, than having made an approach to the discovery of the contagion, as the erudite Mr. Moore well calls it, Hali Abbas did little towards making mankind better acquainted with the true nature of the small-pox. He confounded it with the measles. He had some strange notions of the disorder being probably produced by the dregs of the milk, the better portion of which had been taken away by the suckling child, and betrays in many parts of his work that he was a great borrower from Hippocrates.

It is not necessary for my present purpose, that I should enumerate all the ancient Eastern or other authors, who may have at different times treated of a complaint which continued in those days to spread terror and dismay. If the reader is curious on the subject, he may find much relevant and well-arranged information in a work which I have repeatedly alluded to, Mr. Moore's History of the Small-pox. Suffice it here to observe, that up to the fifteenth century, there appeared in succession the far-famed Avicenna, born at Bokhara in A.D. 992, who spoke decidedly of the con-

\* Vide Rhazis Contin. lib. xxiii. cap. 8.

† Vide *Abulphar Dyn.* ed. Pocock, p. 191.

tagiousness of both small-pox and measles\* (the last disease, however, he looked upon as no other than what he calls a bilious small-pox); Avenzoar, who was a native of Seville and a cotemporary of Avicenna; Constantius, who lived towards the end of the eleventh century, and was born at Carthage: he was a medical practitioner of great note, having studied at Babylon as well as Bagdad; Averrhoes, a Spanish Moor, who wrote on Medicine in the twelfth century: he translated Aristotle, and published a work entitled *Colliget*; Albucasis, who gave to the world a book named *Al Tarif*, more in repute for some judicious surgical opinions than any thing new it contained: he also wrote in the twelfth century; Gilbert, who composed a compendium of medicine, and which is the oldest English medical tract now extant: Dr. Friend conjectured that he flourished about the end of the thirteenth century, in the reign of the first Edward, though we have no testimony that, on the subject of small-pox, he brought forward one original idea; after him came Gentili of Foligno, and Herculaneus, both of whose writings are involved in all the erroneous doctrines of Avicenna; and lastly, John of Gaddesden, who was author of the famous dissertation on medicine known by the appellation of the "*English Rose*," and who, though he was principal physician to Edward II., has, in his chapter on small-pox and measles, omitted few of the mistakes of the Arabians.

From the fifteenth up to the middle of the seventeenth century, the science of medicine continued gradually to improve. Many ridiculous theories, however, regarding the *variolous* disease were broached during that period; till, as we have seen, our distinguished countryman, Sydenham, dispelling those clouds which had long darkened the medical horizon, brought to light a new era in physic: nor was the brilliancy of his reputation, as has been well said by an able writer,† in any way obscured by his immediate successors, great as they were, Etmuller, Boerhaave, and Cullen.

Perhaps no disease, to which the human frame is subject, has excited more laborious discussion than the small-pox; yet, after all, little of a positive nature has been ascertained respecting it, beyond the facts, that it is produced by a specific contagion, or a matter, as it has been called, *sui generis*; that it rarely happens that the same person is attacked twice by it; that it is distinguished into a mild and malignant sort; and lastly, that the Almighty

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\* Vide Avicen. Canon, lib. iv. tom. 1. cap. 6.

† Mr. Moore.



has, in his mercy, bestowed on mankind no less than two powerful weapons with which to combat it: these are *Inoculation* and *Vaccination*. How the small-pox could at first have originated sets all conjecture at defiance; and it must be difficult to account for this singularity regarding it, that although nothing but variolous matter, under some modification or other, has the effect of generating the disease,\* yet it seems to be more prevalent at some seasons than at others; as if its appearance was consequent on a peculiar state of the air; an idea which has been held very cheap by the author just cited, as well as by others.†

Many physicians of note believe that the small-pox contagion is limited to a very narrow circle, and that it is rarely conveyed by the wind to a distance; and we know that Dr. Haygarth in his "sketch of a plan to exterminate this malady from Great Britain," tells us that certain facts appear to exhibit negative proofs, that open air is not contaminated by it to a greater distance from the patient than one thousand five hundred feet, and probably not to one hundredth part of that space: how then did it happen, it may be asked, that for years together in India, previous to the practice of vaccination, the malady was not heard of in some districts; then, without a possibility of its being traced to any evident cause, did it come like a pestilence, spreading with rapid strides, and sparing neither sex nor age nor condition? So much was the calamity dreaded, that religious ceremonies were, and I presume still are, performed annually in every village to deprecate the scourge; humble supplications were made by people of all ranks at the shrine of the small-pox goddess; and prayers offered up, calling on her to take under her care such as might be suffering from, or had not yet been visited by, the terrible affliction.

The mild disorder *variola discreta* is called in Tamul *Peri ammay*, in Telinga, *Pedamma*; in Pali, *Kruivan*; in Sanscrit *Masúriká*; and in Dukhanie, *Barí-sítlá*: it may be found treated of in various Tamul *sastras*, common in Lower India; but more especially in that named *Vaittiya Vaghadam Airit Anyúru*, a medical work by Agastya. The same complaint is termed by the modern Arabians, *Ableh* ابله also *Aljuderi*; and by the Malays, *Cachar* تاجار; a well written treatise on it in Arabic is entitled *كتاب الجدري والمحصبة*, and was composed by *Abu Jáfár Ahmed bin Muhammed*. In a Sanscrit book common in Ceylon and written in the Singalese cha-

\* See Woodville's History of the Small-pox, p. 3. † See Dr. Wilson on febrile diseases.

acter, entitled *Madhava Nidhana*, consisting of 1,375 verses, the small-pox is fully described. To the confluent form the Tamuls have given the appellation of *Panisheri ammai*, and both this and the simple affection assume nearly the same appearances in India that they do in colder countries; with this difference, that in the hot climate, owing, it may be presumed, to the stimulus of heat, the distemper is evidently a little accelerated in all its stages. It is a singular fact that the small-pox most frequently shews itself in the East in the cold season; that is, on the Coromandel coast, from the end of November to the middle of February; and I have also observed that, in general, at that period, it is more apt to be severe than in the warm and dry weather. For this last peculiarity it might be difficult to assign a cause, unless we are allowed to suppose that those who have the disease suffer more from being, in the cold months, closely pent up in their small huts (which, owing to their clay floors, mud walls, and straw roofs, must be extremely damp\*), instead of being allowed to lie in open verandas, as they had been in the hot season, where they enjoyed at least a free circulation of air, and were at the same time screened from the mid-day heat.

By Dr. Hillary's† account of the small-pox in Barbadoes, however, it would seem to have appeared there generally in the months of March, April, and May, which constitute in that island the warm and dry season of the year. It is strange that Moseley, who wrote professedly on the disorders of hot climates, should not mention the malady; nor does Dr. Hunter, in his "Diseases of Jamaica," take the least notice of it; though I perceive that it has found a place in a little work entitled "Letters and Essays on some of the West-India Complaints," by Mr. Quier,‡ in which he informs us that the small-pox began to shew itself a little before Christmas in 1767; at first mildly, but as the season advanced it grew frequently fatal, and as summer came on it was often of the worst kind. In Minorca, which though not a tropical, is a hot country, Cleghorn§ tells us that the disease was epidemic in 1742 and 1746. When it first appeared in 1742, the inhabitants were astonished, as they had not seen the disorder for the last seventeen years,

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\* To the great dampness of Cork, owing to its situation and other causes, Dr. Walker ascribes the severity of the small-pox in that city. See his work on the Small-pox.

† See his *Diseases of Barbadoes*, p. 17.

‡ See *Work*, pp. 4 and 5.

§ See *Cleghorn's Diseases of Minorca*.

but remembered well the havoc it had then committed. In fact, as far as I can learn, no part of the world, with the exception, perhaps, of some of the smaller lately discovered islands, is now altogether exempt from the evil. In Ceylon\* it was often of the worst kind; in Java (where it is termed *ketumbaun*), in Sumatra, and in China,† it was terrible; nor was it less so in the Malayan Peninsula and in all the different Eastern islands. At Banda and Amboina it had been observed to shew itself once in six or seven years; but, alas! the visits, “though far between,” were generally most baneful in their consequences.

Inoculation for the small-pox, I should suppose, must have been known and practised, in some provinces of Asia, at a more remote period‡ than we can by any authentic records ascertain; nor is it a matter of great consequence, to obtain any very minute information as to the time. I think it probable that this method of rendering the complaint milder may have been had recourse to in different countries, without any communication whatever having taken place betwixt them on the subject; and, in all likelihood, was discovered in each by observing the consequences arising from chance contact, when the pustules were broken: in the same way that the cow-pox was first noticed by milk-maids, or those employed in handling the cows. Many conjectures have been given to the world: Mr. Maty was of opinion, that the regions lying betwixt the Caspian and Euxine seas were the centre from which inoculation spread: for this supposition, however, Dr. Woodville§ thinks there are no satisfactory grounds. D’Entrecolles has remarked, that the Tartars were entirely ignorant of it in 1724: and the same author has observed, that in the province of Kean-nan, and in the other eastern parts of China, it is more frequently resorted to than in the western. Whether China or India has the prior claim to the discovery of inoculation, is a point still undetermined. Some Jesuits scruple not to say, that it was from the former transmitted equally to India and to Europe. Again, we learn from Chais’s “*Essai Apologétique sur la Méthode de communiquer la Petite-verolle par Inoculation,*” as well as from other authorities, that it was practised in

\* See the Rev. J. Cordiner’s Description of Ceylon, vol. i. p. 254.

† See Dr. John Clark’s Diseases of Long Voyages, vol. i. p. 128.

‡ See the Rev. W. Ward’s View of the History, Religion, and Literature of the Hindoos, vol. iv. p. 339.

§ See his History of Inoculation, vol. i. p. 36.

in Hindustan from the most remote antiquity. Condamine, while at Naples in 1769, was told that inoculation had been common there from time immemorial; and Dr. Russell\* has stated, that the Turkman tribes had been in the habit of inoculating for ages past. Nay, something very like this is also expressed by Niebuhr, with regard to the adoption of it amongst the Arabians.† Of the exact epoch at which this method of mitigating the distemper first attracted notice in England, we have sufficient testimony; it originated in a communication made by Dr. Emanuel Timoni, a Greek, who had studied at Oxford and Padua, to his friend Dr. Woodward, from Constantinople‡ in 1713, in consequence of having witnessed the good effects of it in that city; which communication was afterwards published, in 1714, in the Philosophical Transactions: and it is as well known, that Lady Wortley Montague's daughter was inoculated in London with success in 1722, by Mr. Maitland, who had performed the same operation on her son, a short time before, at Constantinople, and who lost no time in disseminating the blessing throughout the British dominions. In South Wales, however, and in the Highlands,§ inoculation is considered by some to have been practised by the old women at a period antecedent to its introduction from the East: and I do not think it at all improbable, countenanced as the assumption is by a letter from Dr. Wright to Mr. Bevan, which may be found in the Philosophical Transactions for 1722, and also by Dr. Monro's account of vaccination in Scotland.

Although we cannot say that inoculation was ever very generally adopted in India by the natives, yet it is sufficiently well understood, that it is practised there, and in various modes, in different provinces. It is in the hands of a particular tribe of Brahmens; but who, though they are remunerated for their labours, are, I fear, often more mysterious than industrious in their avocation. Mr. Moore gives a full account of the method pursued in some of the northern tracts of Hindustan, as described, I think, by Mr. Holwell; and notices the necessary prayers that are recited during the ceremony of the operation, as appointed in the *Atharva Veda* to propitiate the small-pox

\* See an account of inoculating in Arabia, in a letter from Dr. P. Russel, Phil. Trans., vol. lvi. p. 140.

† See Niebuhr's account of Arabia, p. 123, French edition.

‡ Into which city it would appear to have been introduced from the Morea.

§ See Dr. Wilson's Work on Febrile Diseases, vol. ii. p. 286.

deity. The Rev. W. Ward\* informs us, that inoculation is performed not by the regular doctors (vaidya), but by a lower order of Brahmens (Daivajanya), at any period of the year, but chiefly on the 7th, 8th, and 9th of the increase of the moon. This valuable writer also tells us (vol. iv. p. 339), that the variolous matter is introduced into the child's arm nearly in the same way that it is in Europe; but the place chosen is just above the wrist; in the right arm of the male, and the left of the female. I found, while in the Ganjam circar, that inoculation had been prevalent there when the European conquerors first got possession of it; and I have no doubt, from what I witnessed and have since heard, that it must have been customary in that district for many ages past. There is this peculiarity in the fact, that it is not amongst the Gentoos who inhabit the range of low and richly cultivated country along the sea shore that the salutary precaution is usually resorted to, but amongst men comparatively less civilized, who talk a barbarous dialect, have a dissenting form of religion, and who live in the more inland and hilly country. They are called *Worriahs*, and are distinguished by boldness, hardihood, and attachment to their respective rajas: a brave, handsome race, who cherish independence, and usually build their castles in the most inaccessible and woody recesses of their mountainous dominions; by which means they but too often have it in their power to give infinite trouble to our regular troops, in times of disaffection and revolt. Here, as in Upper India, it is by a class of Brahmens that inoculation is practised; they assume an exclusive right to it, and from the circumstance of their being priests and physicians combined, they can not only exercise their healing skill, but by their pretended immediate intercourse with the goddess who presides over the disease, can either petition for a mild affection, or in cases of danger, supplicate for the safety of the patient; seldom failing, on such occasions, to carry the little sufferer to the image of the goddess, before which it is bathed with the same water that had been offered at the shrine. The *Worriah* word for small-pox is *Tikarāni*: to inoculation they have given the name of *Tikar*, and the inoculators are called *Tikar Brahmens*. A dose or two of some opening medicine is, for the most part, given previously to the operation being performed; and great care is taken that the child has no eruption on the skin. The infection is conveyed by means of

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\* See his View of the History, Literature, and Religion of the Hindus, vol. i. p. 174.

a sharp instrument, which is first inserted dry under the cuticle, and after having been moistened at the point with the variolous matter, is inserted in the same incision, and there kept for a short time. The part commonly chosen for the reception of the virus is on the outer and upper part of the wrist. Both arms are inoculated at once; and immediately after the office is performed they are slightly bound up, the patient being also ordered to take a little of the virus internally, mixed up with rice in the form of a pill. From this period till the fever comes on, he is ordered to be bathed twice or thrice daily in cold water, is cautiously kept from the sun's rays, and when the pustules are ripe they are all opened with a needle. With the exception of a little unrefined sugar (*jágarí*), nothing in the way of medicine is given; and this is administered rather as it makes also a part of the offering to the goddess, than from any notion of its virtues.

In the pure habits of the Hindus it may easily be imagined that the inoculated small-pox is almost constantly benign; and this mildness, together with the simplicity of the operation, added no doubt to the powerful influence of custom for centuries, made the inhabitants of India not a little reluctant to the introduction of vaccination. At all times blindly devoted to their ancient modes, interwoven as they are with their religious doctrines, beyond perhaps any people on earth, they are strongly averse to whatever innovations might lead them to forsake the usages of their ancestors; and why they should give a preference to a new method of combating the disorder, which they felt had already been rendered sufficiently innocent, they neither could comprehend nor wished to have explained to them.

Previously to the introduction of vaccination into India, inoculation for the small-pox was almost invariably attended with the happiest effects amongst the European inhabitants. The time of life selected for receiving the disease was generally after the child had cut all its first teeth; and the season of the year, that which ensues after the rains are over. But, with all its advantages, inoculation must still be allowed, for many obvious reasons, to be far inferior to the recent and more extraordinary discovery of *vaccination*, for most of what is practically valuable in which the world stands indebted to the observations and patient investigation of Dr. Jenner, who, prompted by the best feelings of humanity, and supported by the spirit of ingenious research, most happily established one of the greatest blessings that was ever bestowed on man.

With regard to the origin of the Jennerian disease, for so it ought perhaps to be called, there has been not a little discussion. The Illyauts of Persia say it is found upon their *milch sheep*. Dr. Jenner himself, in his tract above cited, has traced it from the heels of the horse\* to the nipple of the cow, and from that to the hands of the dairy-maid. This notion met with considerable opposition; and many experiments were in consequence made to ascertain whether the cow-pox could or could not be produced by the matter of grease applied to the udder of the cow. Woodville, Coleman, and others, attempted to bring the regular malady into action in this way, and failed; though it would appear that subsequent experiments by Dr. Loy were attended with an opposite result; and, from the facts† adduced by this last-mentioned gentleman, we are led to conclude that Dr. Jenner was correct in his opinion; and that a person who has been infected with the disorder from a horse's heels, becomes equally unsusceptible of the small-pox contagion as if he had had the common vaccine disease. From Dr. Loy's conclusion we are induced to believe, that there are two kinds of grease to which the horse is subject; one merely local, the other attended with constitutional and febrile symptoms;‡ and that it is from the eruption which accompanies the latter, only, that the fluid can be obtained which produces the genuine cow-pox vesicle: and, in this way, some late writers have accounted for the non-success of Dr. Woodville and others, who may not have made choice of the proper disorder in the horse. Further investigation might have been made, to put the point in question for ever at rest: though, after all, it is perhaps of little consequence. To have found the cow-pox producing fluid in the purest of all animals (the cow), ought surely to be sufficient guarantee for our most confident repose.

The discovery of vaccine inoculation in England naturally excited great interest and curiosity amongst the inhabitants of other territories, and whilst they admired and adopted it, they were not a little anxious to obtain, if possible, the wonderful preservative, from the cows of their respective countries. Dr. Lewis Sacco of Milan, in his treatise on the cow-pox, informs us that the cows of Lombardy are subject to this affection; and that it is contagious in the herd. C. Favo, vaccine inoculation director, addressed a

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\* See Dr. Jenner's Inquiry into the Causes and Effects of the Variolæ Vaccinæ, p. 6.

† Loy's Account of some Experiments on the Origin of the Cow-Pox, p. 20.

‡ See Annals of Medicine, vol. ii., p. 263.

letter to Dr. Woodville, from Milan, dated 7th of November 1801, in which he observed that he was the first person in Italy who found that the cow-pox prevailed amongst the cows of that part of the world. In America,\* after much industrious research, this singular vesicle was discovered by Dr. William Buel of Sheffield, in the state of Massachusetts, on the cows of that place, about the middle of May 1801: it was also found in the state of Connecticut, by Dr. Elisha North of Goshen, as well as by Dr. J. Trowbridge of Danbery; and there is no doubt, that it has been met with in several other of the American provinces. I should rejoice if I could here add, that we had been equally fortunate in India; but, alas! in no part of those vast dominions, as far as I can learn, is the vaccine disease at present to be found on the cows; neither has the exact affection of the horses' heels, which has obtained the name of grease, been seen. It is more than probable, however, that on the cows of the adjoining country of Butan† the complaint might be discovered, were it diligently sought after: as that is a land, notwithstanding its low latitude (from 26° 30' to 28° 50' north) in which are found many of the productions of Europe, owing to its great elevation above the level of the sea. It must be remarked, that I have said that the vaccine disease cannot at *present* be found on the cows of India. This expression I have used, as there are some grounds for believing that inoculation for the cow-pox was known in days of old to the Hindu medical writers. From a communication written by *Calvi Virambam*, a learned Hindu, and which appeared in the *Madras Courier* of the 12th January 1819, I make the following extract. "To substantiate the fact that the inoculation of the  
 " cow-pox was known in remote times to the *Vaidyas*, it is only necessary  
 " to refer to the *Sacteya Grantha*, attributed to *Dhanwantari*, and there-  
 " fore undoubtedly an ancient composition. In one part of the work, after  
 " describing nine *several* kinds of small-pox, of which three (one *alabi*,  
 " being the confluent) are declared incurable, the author proceeds to lay  
 " down the rules for the practice of inoculation. From this part the following  
 " two excerpts are made; of the first of which the original is given in the  
 " English character, and with it a literal translation: of the second the  
 " original is not given, but merely the translation."

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\* See Medical Repository, vol. v. p. 93.

† Extending from Chichacottah to Phari. See Turner's Embassy to Thibet, pp. 20 and 178.



*Excerpt First, from the Sacteya Grantha.*

“ D'hénu stanya ma' suchiva naránáncha, ma suchicá,  
 “ Tajjalám báhu muláchcha sastránténa grīhítaván,  
 “ Báhu múlé cha sastráni ract'ótpatti caráni cha,  
 “ Tajjalám racta militam sphótaca jwara sambhavah.”

*Translation of the above.*

“ Take the fluid of the cow-pox on the udder of a cow, or on the arm  
 “ between the shoulder and the elbow of a human subject, on the *point* of  
 “ a lancet, and lance with it the arms between the shoulder and elbow  
 “ until the blood appears; then mixing the fluid with the blood, the fever  
 “ of the small-pox will be produced.”

*Excerpt Second, the Sanscrit Text being omitted.*

“ The small-pox produced from the udder of a cow will be of the same  
 “ gentle nature as the original disease, not attended by fever nor requiring  
 “ medicine. The diet may be according to the pleasure of the patient,  
 “ who may be inoculated once only, or two, three, four, five, or six  
 “ times. The pock, when perfect, should be of a good colour, filled with  
 “ a clear liquid, and surrounded with a circle of red. There will then be  
 “ no fear of the small-pox so long as life endures. When inoculated from  
 “ the udder of a cow, some will have a slight fever for one day, or two  
 “ or three days, and with this there will sometimes be a slight degree of  
 “ cold fit; the fever will also be attended by a round swelling in the arm-  
 “ pit, and the other symptoms of the small-pox, but all of a very mild  
 “ nature. There will be no danger, and the whole will disappear.

(Signed) “ CALVI VIRAMBAM.”

“ Madras, January 2d, 1819.”

Respecting the authenticity of the above I shall say nothing, as I am unfortunately not a Sanscrit scholar. The book, however, from which the quotation is said to have been made by *Calvi Virambam*, is well known in Lower India, and might easily be examined. I have myself many doubts; and it is certainly a presumption against it, that the disease is no longer to be found on the cows of that country. For the absolute existence of the cow-pox on the cattle of Persia, I am happy to say there are somewhat more immediate and substantial proofs, as shown by a letter

written by W. Bruce, Esq., resident at Bushire, to W. Erskine, Esq., of Bombay, which appeared in the Asiatic Journal for June 1819; and to which my attention has been called by my friend, Dr. B. G. Babington, late of Madras.

*Extract from the above-mentioned Letter.*

“ When I was in Bombay, I mentioned to you that the cow-pox was well-known in Persia by the Illyauts, or wandering tribes. Since my return here (Bushire), I have made very particular inquiries on that subject, amongst several tribes who visit this place in the winter, to sell the produce of their flocks, such as carpets, rugs, butter, cheese, &c. Their flocks, during this time, are spread over the low country to graze. Every Illyaut whom I have spoken to on this head, of at least six or seven different tribes, has uniformly told me, that the people who are employed to milk the cattle caught a disease, which having once had they were afterwards perfectly safe from the small-pox; that this disorder was prevalent amongst the cows, and shewed itself particularly on the teats; but that it was still more common among, and more frequently caught from, the *sheep*. Now this is a circumstance that has never, I believe, before been known, and of the truth of which I have not the smallest doubt. To be sure on the subject, I made more particular inquiry of a very respectable farmer who resides in my neighbourhood, named Malilla (and whom Mr. Stephen Babington knows well). This man confirmed every word that the Illyauts had said, and that his own sheep had it. There may be one reason for the Illyauts saying that they caught the malady oftener from the sheep than the cows; which is, that most of their butter, ghee, and cheese, is made from sheeps’ milk: their black cattle yield very little, being more used for draught than anything else.”

Whatever may have been done formerly in India, vaccination, as it is now there practised, was first introduced into that country through the zealous exertions of European foreign physicians; a description of men whose humanity and philanthropy, thanks to heaven, flourished in spite of all the restrictions of the French revolution. The cow-pock fluid was taken from cows in *Lombardy* by Dr. Sacco, and despatched by D. de Carro from Vienna to Bagdad, from which place it went by different stages to Bussora and Bombay. The infected threads sent to the last-mentioned place failed; but others, transmitted to Trincomallee, produced the vaccine disease there

in August 1802.\* Little time was lost in disseminating the affection over Ceylon; and it was from that island that the first active virus was conveyed, by the ship Hunter, to Madras, where the boon was neither coldly received nor languidly circulated; and if the Indian world now enjoys in an eminent degree the benefit of Dr. Jenner's labours, it must be confessed that it was in a great measure owing to the judicious steps taken by Earl Powis, then Lord Clive, who was at all times watchful how he could best promote the real interests of the country which he governed. On this occasion his Lordship was very ably aided by the exertions of Dr. James Anderson, at that time physician general, and whose immediate charge the new arrival consequently became; this gentleman, with all that cheerful and active benevolence which ever distinguished him, and rendered his long life one continued study how to avert the calamities, and alleviate the sufferings, which are incident to mankind, lost not a moment in adopting the wisest method, not only for preserving the valuable stranger in perfect purity, but for rendering every corner of our Asiatic dominions a partaker of the gift. Nor did he rest satisfied here; but with admirable foresight, transmitted the vaccine virus to every distant and eastern kingdom or province within the range of his extensive correspondence. In the first establishing of vaccination at Madras, Dr. Anderson permitted no man to sleep at his post, fully aware of the inestimable value of the newly-discovered preventive, as well as the difficulty with which it had been brought to so remote a land. Government, at that time occupied with serious political affairs, were reminded by him how necessary it was that superintendents and subordinate vaccinators should be instantly appointed in different districts, to keep alive and spread the welcome present which they had just received; and that, as in the introduction of all that is novel in India, much reluctance might naturally be expected, he pointed out in what manner exhortatory proclamations should be made, and how pecuniary rewards and encouragement could with the greatest advantage be bestowed on those who proved most successful in prevailing on the natives to adopt the cow-pox inoculation. In a word, I hesitate not to say, that had it not been for the example and assiduity of this enlightened and amiable man, cordially assisted and encouraged as he was by the supreme authority, the *variola vaccinae* would in all probability have long before this

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\* See Cordiner's Ceylon, vol. i. p. 255.

expired, amidst the hot winds, indolence, or other local obstacles peculiar to the regions of the torrid zone.

Vaccination, notwithstanding its many enemies\* at one time in England, and the numerous real or pretended cases that have been brought forward against it, still preserves its original good name in *India*, pure as the breath of the animal from which it springs! Nor can I find, that when care has been taken to select the true disease with a perfectly transparent fluid; to take that fluid from the vesicle at the proper time† (not later than the seventh or eighth day); to avoid vaccinating persons who may have any breaking-out,‡ of whatever nature, on the skin; and by having invariably recourse to Mr. Bryce's test:§ when those points have been attended to, I repeat, I cannot find that vaccination has ever in that country, in any one instance, disappointed the hopes of the practitioner, or a mother's fondest wish. It is true, that, when the new disease was first brought to the Coromandel coast, there were a few blunders committed by inexperienced men, who mistook for the real malady some of those pustules which frequently appear on children in hot climates, and were astonished that they could not produce from them a disorder similar to what they had seen pictured in books or heard described; or, perhaps, they had trusted to the appearance of irregular vesicles,|| and hastily deemed them sufficient. But mistakes of this nature were soon rectified; and for many years past no doubts have been entertained, either as to the exact *facies* of the true complaint, or as to the non-existence of those evils which it was said occasionally to leave

\* There are those who suppose that the preventive influence of the cow-pox fluid may perhaps only operate on the frame for a certain period or number of years, an evil which, if it does exist, might be obviated by repeating the operation of vaccination from time to time.

† By not attending to this caution, mischief is sometimes done by the production of a spurious disease; a fact clearly proved by Dr. Friese, of Breslaw. See *Med. Trans.*, vol. xiv. pages 233, &c.

‡ An inestimable caution given us by Jenner.

§ Which is, to vaccinate one arm from the other; when it will be found, that if the first operation has been effectual in bringing on the real constitutional disease, the second attempt will fail in producing the regular vesicle.—See Bryce on the Cow-Pox, page 207.

|| Dr. Willan describes three species of vesicles which have at times been mistaken for cow-pox, but which do not wholly secure the constitution from small-pox.—See his work on Vaccine Inoculation, page 39. A degenerated cow-pox was also noticed by Sir Gilbert Blane; in it the vesicle is amorphous, the fluid often of a straw-colour or purulent, and the areola absent, indistinct, or confused.—See his examination before the House of Commons.

behind. It has been affirmed, and I believe with truth, that the cow-pox virus is rendered milder\* by passing through the human frame; but this is what I could never put to the proof in India, from not being able to find the vesicle on the cattle: a fact which must lead to the caution of taking the virus from time to time from the cow, in order to preserve, as much as possible, its peculiar quality.

The small-pox supervening to regular vaccination has been called the modified disease,† and would appear to put on somewhat different appearances, owing to causes which it is not necessary here to enumerate. During my residence in India, after the introduction of the *variola vaccinae* into that country, which was not more than twelve years, I never heard of a single death occasioned by vaccination, nor by small-pox coming on after it; nor do I think that, in the same period of time, I witnessed more than four well-marked cases of the modified disease. In three of these, the fever previous to the eruption was very slight, in the fourth it was more severe; but in all it disappeared, or nearly so, on the coming out of the eruption; that is to say, on the second or third day. The pustules, which did not in any of the cases amount to more than one hundred, were generally small, and contained a milk-like rather than a purulent fluid; and, in place of continuing to the eleventh or twelfth day before bursting, they dried and became light brown crusts on the fourth day; and there was this peculiarity in every instance, and I am not aware that it has been ever noticed in Europe, that there was a total want of that strong, singular, and rather loathsome smell, which constantly attends the common small-pox when the pustules are mature.

Another modified eruptive malady, which I have oftener than once met with in India, I can consider in no other light than as the *hives (emphyesis globularis)* changed in its nature by vaccination, as the affection has nearly all the distinguishing symptoms of that disorder, as described by Dr. Heberden,‡ but in a milder degree. In the modified complaint I could never perceive any feverish symptoms whatever, with the exception of a little restlessness in the child. About the second day, the pustules (if pustules

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\* See Dr. Mason Good's Study of Medicine, vol. ii. page 596.

† For an excellent account of a varioloid epidemic which lately prevailed in Edinburgh and other parts of Scotland, with observations on the identity of Chicken-pox and modified Small-pox, see a work on the subject by Dr. John Thomson.

‡ See Medical Transactions, vol. i. article xxii.

they can be properly called, which contain a watery fluid) felt hardish under the finger, as if made of horn, and on the fourth day dried up; so differing from the regular *hives* of India as well as Europe, in which the eruption is known to appear on the fourth day with little abatement of the fever.

This notion of a modified *hives* (*emphyesis globularis*) in India may appear questionable, when it is taken into consideration that none of the varieties of water or chicken-pock (*emphyesis varicella*) have ever yet been given by inoculation: a fact ascertained by the distinguished author just quoted. Yet I am not aware to what other cause than previous vaccination could be ascribed the peculiar mildness of a disease (*hives*), well known to be in its natural character, sufficiently inflammatory; an affection which, though it cannot be excited by inoculation, is known to attack people but once in the course of their lives.

When I first adopted vaccination in the Carnatic, I found that even with the best *virus*, I often failed in producing the disease; till it struck me that if, previous to inserting the fluid, the arm was to be gently rubbed with a piece of dry flannel, so as to induce a slight degree of warmth, it might render the absorption more certain. This method I put in practice, and with success.

Considering that the vaccine vesicle cannot be, or has not yet been, found on the cows or sheep in India, the greatest care becomes necessary in that country to keep it up in proper purity in the human race; it may not, therefore, be of slight importance to be generally known, that it was discovered by the late much lamented Mr. Bryce of Edinburgh, that the crusts properly preserved from the air in a closely shut phial, preserve their active virtue for a great length of time, and may thus be transmitted to the most distant countries, and there produce the disease.

In propagating vaccination in our Eastern dominions, a good deal had been done previously to my leaving Madras in 1815; yet it is evident that still greater things might have been accomplished, had it not been for the perverse prejudices of the Hindus, which, however, I am happy to learn, are gradually giving way, as they become more and more satisfied of the value of the discovery. Annual reports of the progress in overcoming those obstacles were regularly made, in my time, to Dr. Jenner, by the different superintendents of vaccination of the three establishments; and, in fact, many praiseworthy measures taken, to aid that distinguished individual in completely establishing the virtues of this extraordinary preservative.

By an account published at Madras by Mr. A. Mackenzie, it would appear that, from the 1st September 1806 to the 1st September 1807, there had been vaccinated at the presidency of Fort St. George and the subordinate vaccine stations subject to that authority, 243,175 persons of different sexes, castes, and ages. Mr. Haughton, assistant surgeon of the coast artillery, who returned from China in May 1809, informed me that he found the cow-pox in high repute at *Macao*, under the zealous direction of Mr. A. Pearson, surgeon of the Honourable Company's factory at Canton who had written a short treatise on it, which had been admirably translated into Chinese by Sir George Staunton. By an official report communicated by Dr. Christie, superintendent of vaccination in Ceylon, I perceive that in that island, during the year 1808, no less than 26,207 individuals had undergone the operation and had the genuine disorder; which made, in all, vaccinated under that gentleman's care, since the introduction of it at Trincomallie in 1802, up to 1808, 103,036 persons of all ages. Subsequent and much more recent information\* from Eastern countries, from India, Persia,† Java, China, Sumatra, and Manilla, give the most pleasing assurances of the success which invariably attends the adoption of the Jennerian disease in those distant regions; where a casual case of small-pox appearing after it has, from its great mildness, long ceased to alarm, and where the constant security which it affords against that horrific monster, *the variola in its malignant form*, have at length happily convinced millions, that if, from a powerful empire in the west came an inordinate thirst for dominion and the sword of the conqueror, thence also came the sympathizing heart and the healing hand.

*Edinburgh, 20th December 1826.*

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\* Up to the years 1822 and 1823.

† It would appear by Morier's second journey to Persia, that, about the year 1810, the king of that country actually caused *ferashes* to be placed, in order to prevent the women from taking their children to the surgeons to be vaccinated; and this was done at a time when, from the anxiety of the natives themselves to adopt the preventive, there was every reason to hope that it would become general in Tehran. In 1816, however, we learn by a communication from the English ambassador at Ispahan, that the presumptive heir to the throne and fifteen of his suite had been vaccinated, and that the blessing was making rapid strides throughout the Persian dominions.—See *Asiatic Journal* for October 1816, and September 1818.